# Managing Water Quality During Changing Climate

October 25, 2017 Presentation to the
Water Quality Coordination Committee

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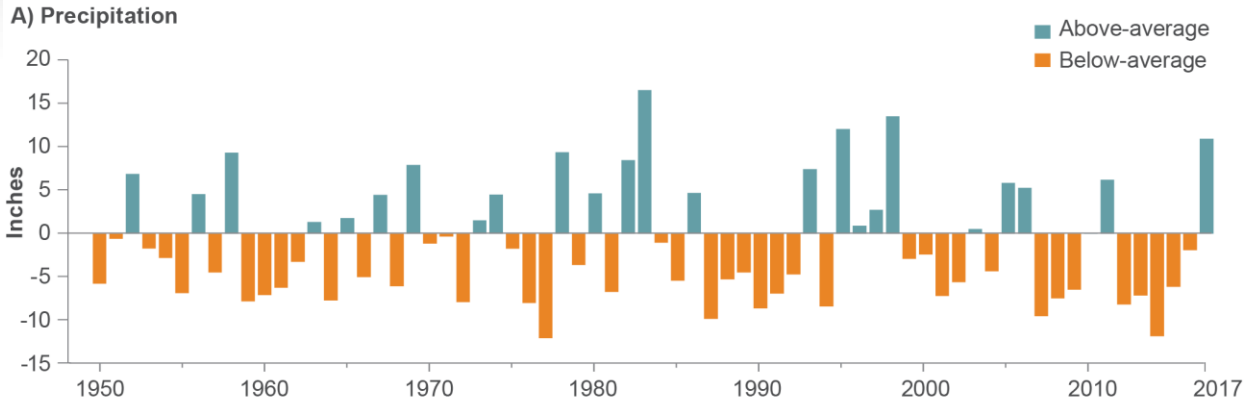
# Outline: consequences of batting last in a panel

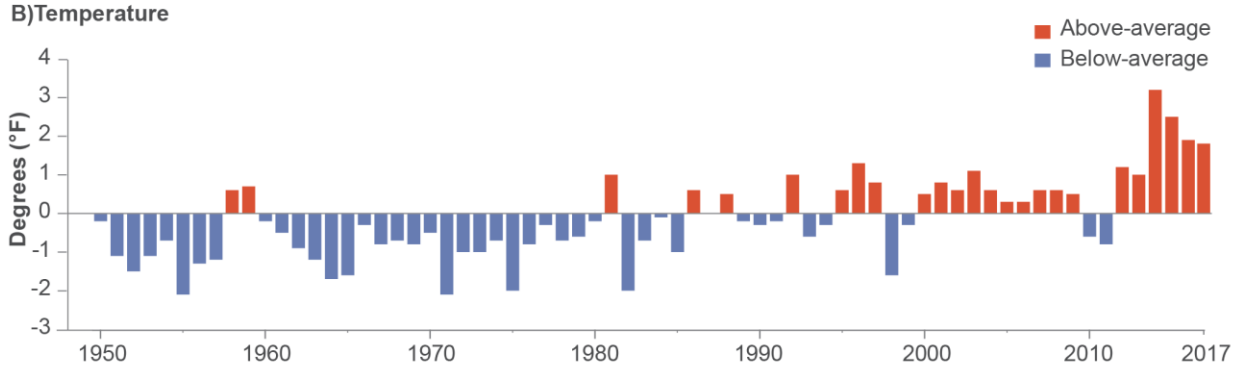
- Observations about the recent drought and its relevance to permitting under climate change
- What issues were raised in the previous presentations that are worth the WQCC spending more time on
- And issues that were not raised-–or not emphasized enough

Source: NASA
January 23, 2014

# Dry Run for a Dry Future: Drought of 2012-2016

- Urban suppliers were generally well prepared, and economy remained robust, but issues loom
- Agriculture was hit hard, but abundant groundwater and high commodity prices helped
- Ecosystems fared poorly due to water management and extreme climate conditions




Source: Mount et al. 2017

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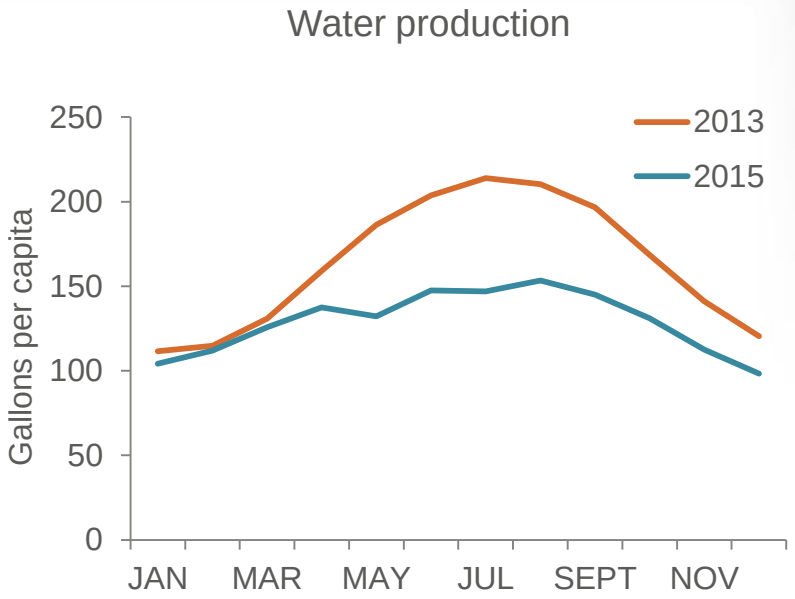
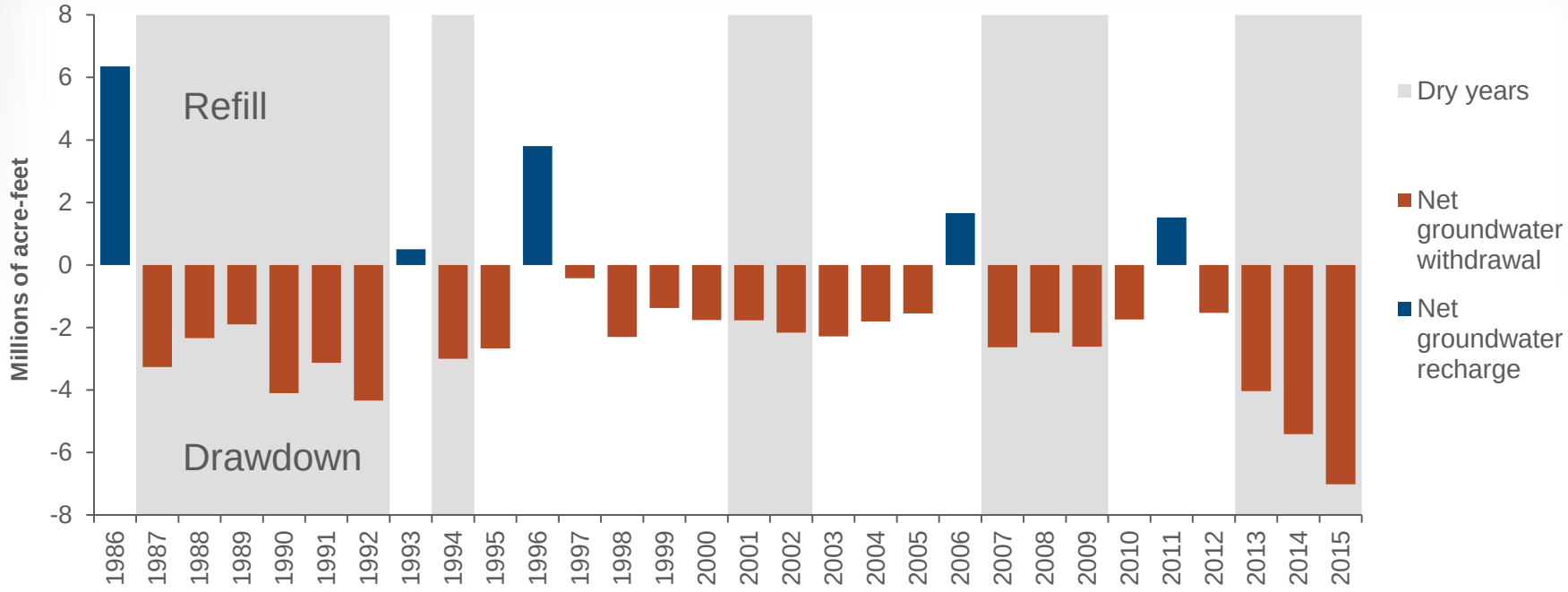
# Significant changes are looming in the urban sector that will affect permitting

- Demand Management
  - Conservation: to what end?
  - Unintended consequences
    - Financial
    - Wastewater treatment
    - Urban creeks
- Supply Management
  - Water quality impacts of reuse and recycling
  - Consequences of storm water capture
  - Water quality of new sources of groundwater recharge



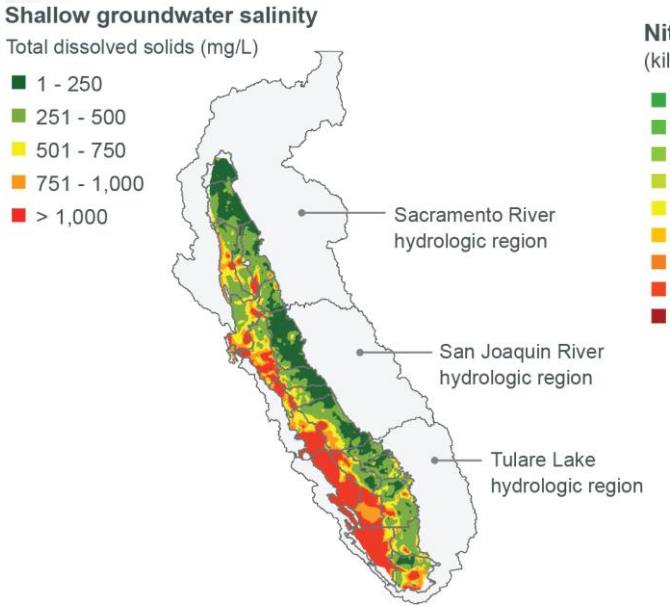

Source: Hanak et al. 2017

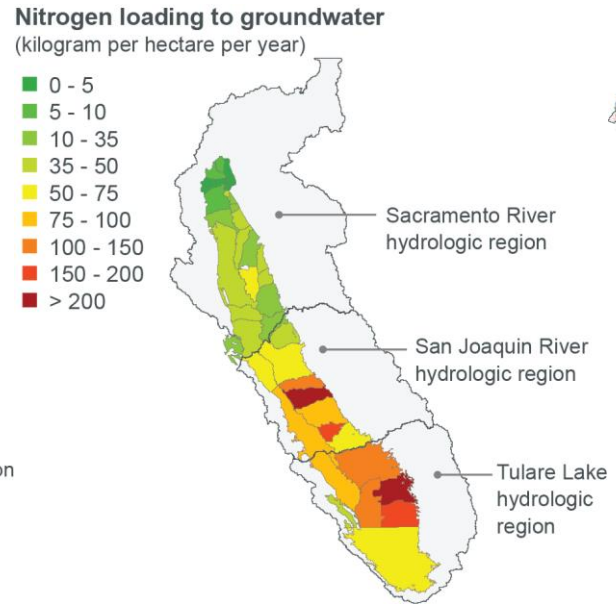
# Agricultural sector: role of groundwater (SJV)

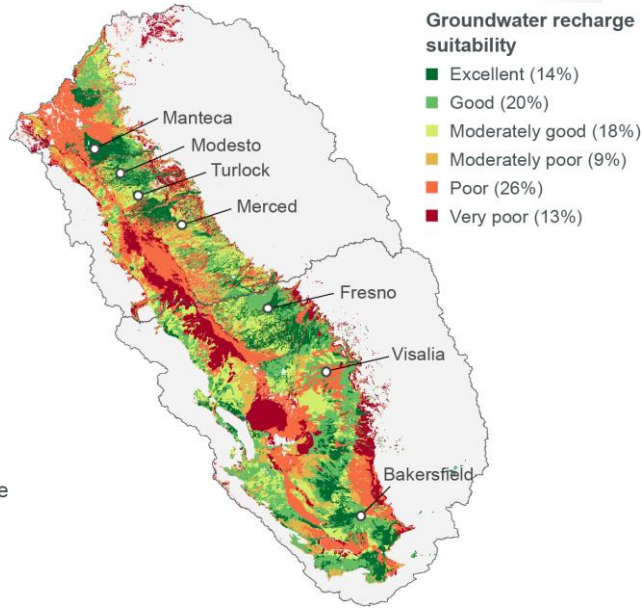



Source: Hanak et al. 2017

# And water quality will play a major role in sustainability and adaptation to climate change in the ag sector



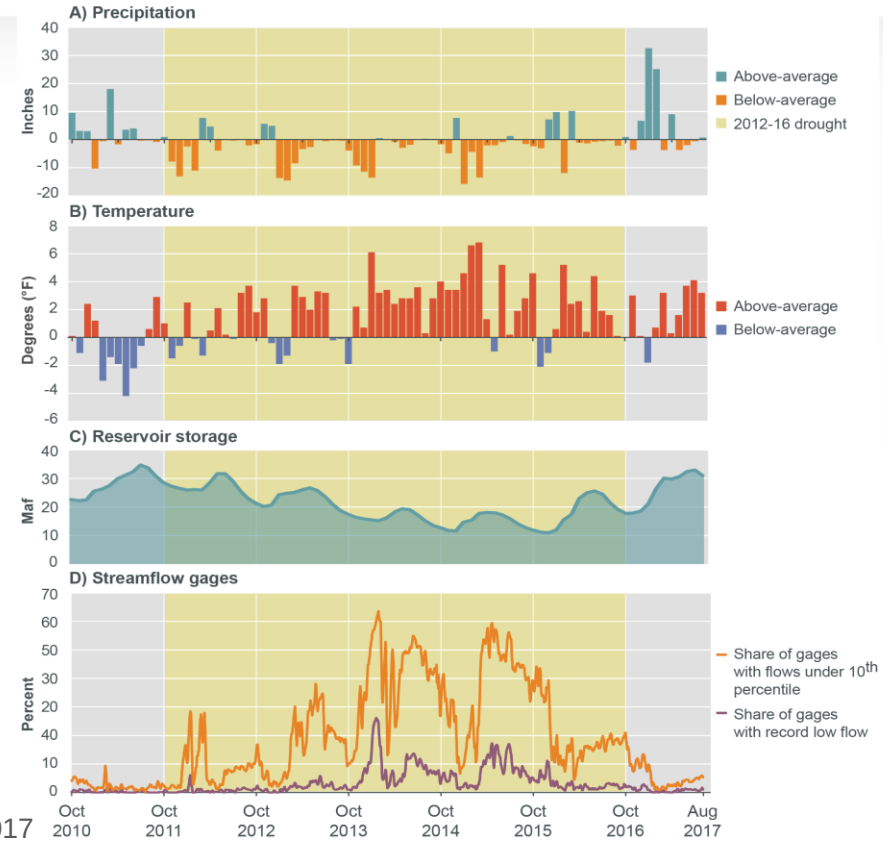




Source: Hanak et al. 2017

# Ecosystem management is perhaps the most intractable challenge

- Drought as a stress test
  - In-stream flow and water quality regulations not working
  - Little advance planning
  - Few resources available beyond regulatory constraints
  - Major gaps in understanding
  - Lack of planning forced ad hoc decisionmaking




Source: Mount et al. 2017

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  - In-stream flow and water quality regulations not working
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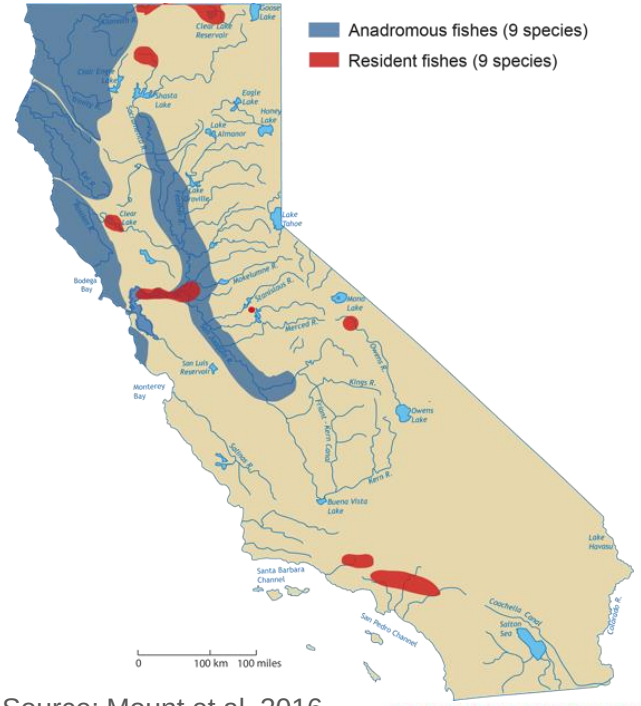
- ***Will need a new way forward to avoid crisis-based management***

Extinction Likely due to Drought




Source: Mount et al. 2016

# Importance of extreme events in permitting: they find the weaknesses in planning and preparation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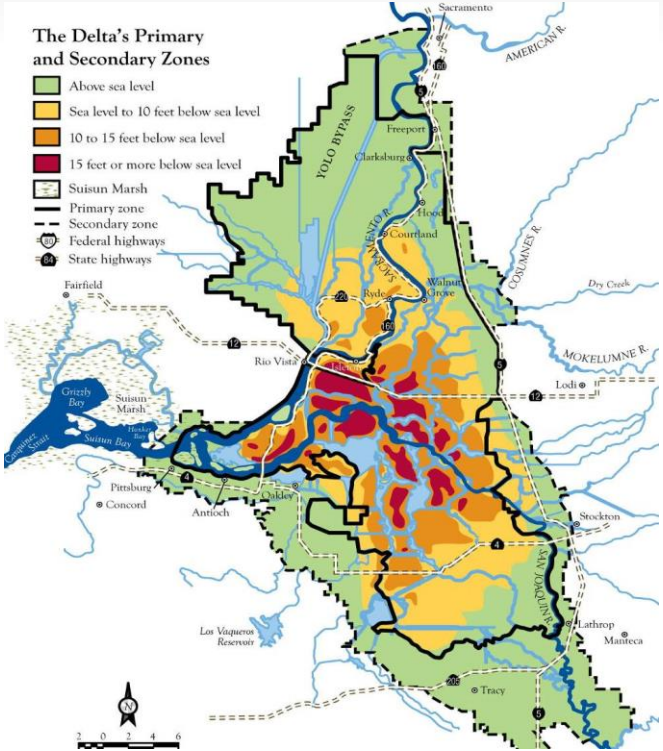
# Issues discussed previously that are worth reinforcing or expanding on

- Urban water management
- Agricultural water management
- Environmental water management



# About these slides

These slides were created to accompany a presentation. They do not include full documentation of sources, data samples, methods, and interpretations. To avoid misinterpretations, please contact:

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Thank you for your interest in this work.